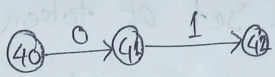
Ans 1 a) $L = \{w | w \text{ in } 01\}$

$0, 1$

NFA:



ON	0	1
40	{40, 41}	{40}
41	∅	{42}
~~42~~ 42	∅	∅

Ans 1. b)

Given:

NFA – M_1

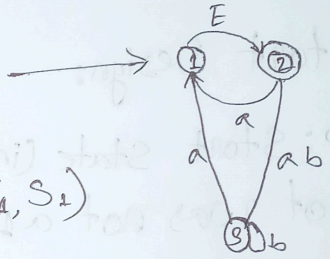
$M_1 = (Q_1, \Sigma_1, q_1, F_1, S_1)$

$Q_1 = \{1, 2, 3\}$

$\Sigma_1 = \{a, b\}$

$q = 1$

$F = \{2\}$



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Ans 1. c) Non Terminals are syntactic variables that denotte sets of strings. the nanteminals define sets of strings that help define the language generated by the grammar a set of token known as terminal symbols (Σ). Terminals are the basic symbolis from which strings are formed.

Ans 4. b) Build a DFA For the following language:

L={w|w is a bit string which conteins the substring 11}

* Start Design:
* 40: Start State (initially of), also means the most recent input was not a 1
* 41: has never seen 11 but the most recent input was a 1
* 42: has seen at least one.

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Ans-5. (a) :- Definition of Turing machine: A Turing machine consists of the following.

(1) An Alphabet Σ of input letters.

(2) An input Tape partitioned into cells having infinite many locations in one direction. the input string is placed on the Tape starting its first letter on the cell i.the rest of the Tape is initially filled with blanks (Bs).

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Ans- 3. b) :- Difference between Regular Language and Context Free Language.

RLs	
* Regular exprs.	* context-free grammar
* OR	* = NDPD As
* = D FSMs	* Parse
* Recognize	* Find unambiguous grammer
* minimize FSMs	* Reduce nondeterminism in PDAs
* closed under:	* find efficient parsers
* concatenation	* closed under
* union	* concatenation
* kleene star	* union
* intersetion	* kleene star
* complement	* Intersection w/ rg langs
* pumping theorem	* Pumping theorem
* D = ND	* D ≠ ND

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Ans-3. a) The chomsky hierarchy, as orginally defined by Noam chomsky, comprises four types of languages and their associated grammers and machine.

Language	Grammar	machine	Example
Regular language	Regular grammar * Right-Linear grammar * Left linear grammer	Deterministic or nond eterministte finit state acceptor	a*
context Free Language	context Free grammar	Nond-eterministic pushdown automaton	$a^n b^n$
Contextsesitive Language	context sensitive grammar	Linear bounded automation	$a^n b^n c^n$
Recursively	enumerable Language	Turing machine	Any computable function

This languages from a strict hierarchy; that is Regular language ⊂ context Free Languages ⊂ context S-ensitive language ⊂ Recursively enumerable language.

(5)

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